

NX3L4053

Triple low-ohmic single-pole double-throw analog switch

Rev. 5.1 — 30 March 2021

Product data sheet

1 General description

The NX3L4053 is a triple low-ohmic single-pole double-throw analog switch, suitable for use as an analog or digital multiplexer/demultiplexer. Each switch has a digital select input (nS), two independent inputs/outputs (nY0 and nY1) and a common input/output (nZ). All three switches share an enable input (\bar{E}). A digital enable pin \bar{E} is common to all switches. When \bar{E} is HIGH, the switches are turned off.

Schmitt trigger action at the digital inputs makes the circuit tolerant to slower input rise and fall times. Low threshold digital inputs allows this device to be driven by 1.8 V logic levels in 3.3 V applications without significant increase in supply current I_{CC} . This makes it possible for the NX3L4053 to switch 4.3 V signals with a 1.8 V digital controller, eliminating the need for logic level translation. The NX3L4053 allows signals with amplitude up to V_{CC} to be transmitted from nZ to nY0 or nY1; or from nY0 or nY1 to nZ. Its low ON resistance (0.5 Ω) and flatness (0.13 Ω) ensures minimal attenuation and distortion of transmitted signals.

2 Features and benefits

- Wide supply voltage range from 1.4 V to 4.3 V
- Very low ON resistance (peak):
 - 1.8 Ω (typical) at $V_{CC} = 1.4$ V
 - 1.0 Ω (typical) at $V_{CC} = 1.65$ V
 - 0.6 Ω (typical) at $V_{CC} = 2.3$ V
 - 0.6 Ω (typical) at $V_{CC} = 2.7$ V
 - 0.5 Ω (typical) at $V_{CC} = 4.3$ V
- Break-before-make switching
- High noise immunity
- ESD protection:
 - HBM JESD22-A114F Class 3A exceeds 4000 V
 - MM JESD22-A115-A exceeds 200 V
 - CDM AEC-Q100-011 revision B exceeds 1000 V
 - IEC61000-4-2 contact discharge exceeds 6000 V for switch ports
- CMOS low-power consumption
- Latch-up performance exceeds 100 mA per JESD 78 Class II Level A
- 1.8 V control logic at $V_{CC} = 3.6$ V
- Control input accepts voltages above supply voltage
- Very low supply current, even when input is below V_{CC}
- High current handling capability (350 mA continuous current under 3.3 V supply)
- Specified from -40 °C to +85 °C and from -40 °C to +125 °C



3 Applications

- Cell phone
- PDA
- Portable media player
- Analog multiplexing and demultiplexing
- Digital multiplexing and demultiplexing
- Signal gating

4 Ordering information

Table 1. Ordering information

| Type number | Topside mark | Package | | |
|-------------|--------------|---------|--|-----------|
| | | Name | Description | Version |
| NX3L4053PW | X3L4053 | TSSOP16 | plastic thin shrink small outline package; 16 leads; body width 4.4 mm | SOT403-1 |
| NX3L4053HR | M43 | HXQFN16 | plastic thermal enhanced extremely thin quad flat package; no leads; 16 terminals; body 3 × 3 × 0.5 mm | SOT1039-2 |

4.1 Ordering options

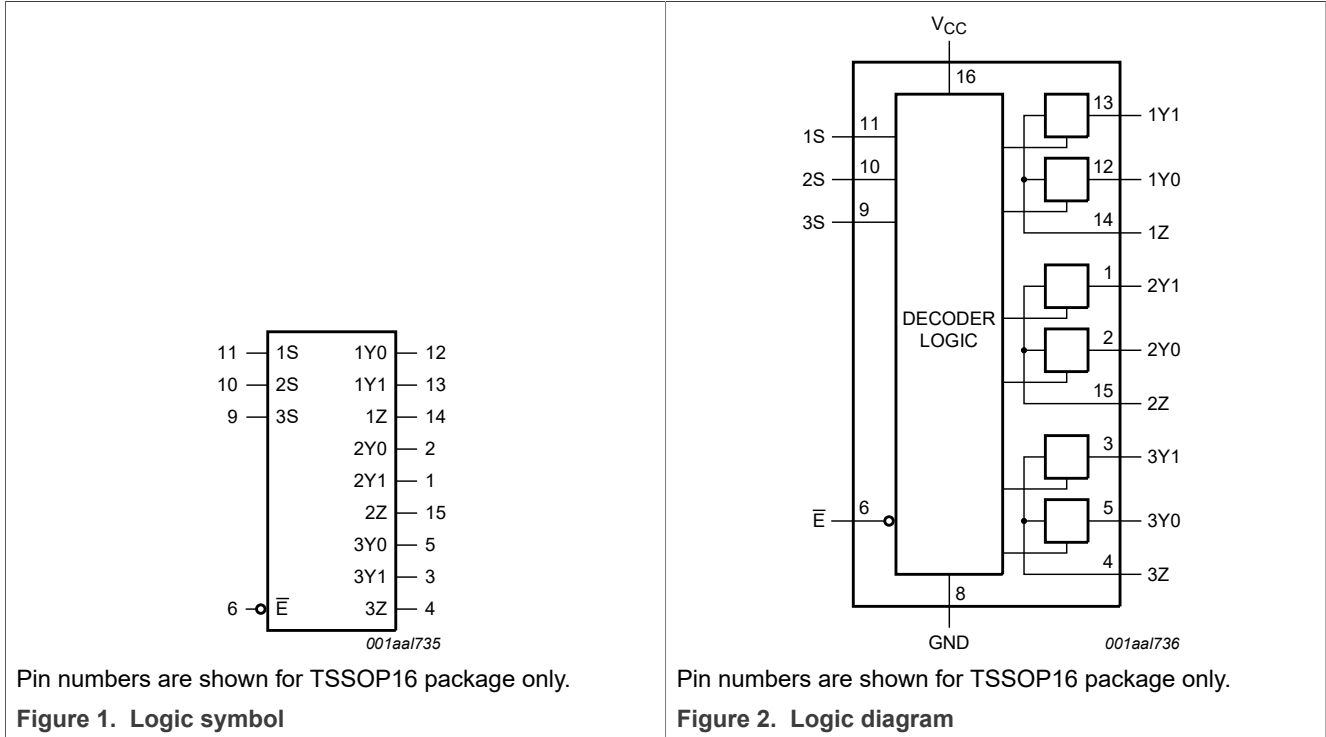
Table 2. Ordering options

| Type number | Orderable part number | Package | Packing method | Minimum order quantity | Temperature |
|-------------|-------------------------------|---------|--------------------------------------|------------------------|--------------------------------------|
| NX3L4053PW | NX3L4053PW,118 | TSSOP16 | Reel 13" Q1/T1 NDP | 2500 | T _{amb} = -40 °C to +125 °C |
| NX3L4053HR | NX3L4053HRZ | HXQFN16 | Reel 7" Q1/T1 NDP SSB ^[1] | 1500 | T _{amb} = -40 °C to +125 °C |
| | NX3L4053HR,115 ^[2] | HXQFN16 | Reel 7" Q1/T1 NDP | 1500 | T _{amb} = -40 °C to +125 °C |

[1] This packing method uses a Static Shielding Bag (SSB) solution. Material is to be kept in the sealed bag between uses.

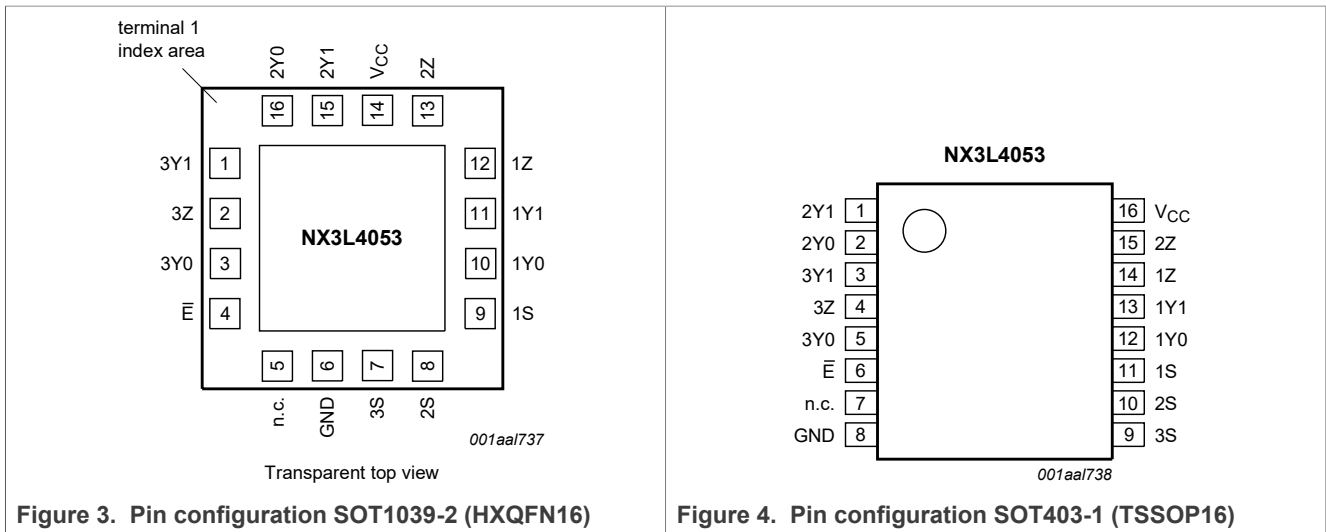
[2] Will go EOL - migrate to new leadframe NX3L2467HRZ orderable part number.

5 Functional diagram



6 Pinning information

6.1 Pinning



6.2 Pin description

Table 3. Pin description

| Symbol | Pin | | Description |
|-----------------|-----------|-----------|-----------------------------|
| | SOT1039-2 | SOT403-1 | |
| \bar{E} | 4 | 6 | enable input (active LOW) |
| n.c. | 5 | 7 | not connected |
| GND | 6 | 8 | ground (0 V) |
| 1S, 2S, 3S | 9, 8, 7 | 11, 10, 9 | select input |
| 1Y0, 2Y0, 3Y0 | 10, 16, 3 | 12, 2, 5 | independent input or output |
| 1Y1, 2Y1, 3Y1 | 11, 15, 1 | 13, 1, 3 | independent input or output |
| 1Z, 2Z, 3Z | 12, 13, 2 | 14, 15, 4 | independent output or input |
| V _{CC} | 14 | 16 | supply voltage |

7 Functional description

Table 4. Function table

H = HIGH voltage level; L = LOW voltage level; X = don't care.

| Inputs | | Channel on |
|-----------|----|--------------|
| \bar{E} | nS | |
| L | L | nY0 to nZ |
| L | H | nY1 to nZ |
| H | X | switches off |

8 Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

| Symbol | Parameter | Conditions | Min | Max | Unit |
|------------------|-------------------------|---|---------------------|-----------------------|------|
| V _{CC} | supply voltage | | -0.5 | +4.6 | V |
| V _I | input voltage | nS and \bar{E} | ^[1] -0.5 | +4.6 | V |
| V _{SW} | switch voltage | | ^[2] -0.5 | V _{CC} + 0.5 | V |
| I _{IK} | input clamping current | V _I < -0.5 V | -50 | - | mA |
| I _{SK} | switch clamping current | V _I < -0.5 V or V _I > V _{CC} + 0.5 V | - | ±50 | mA |
| I _{SW} | switch current | V _{SW} > -0.5 V or V _{SW} < V _{CC} + 0.5 V; source or sink current | - | ±350 | mA |
| | | V _{SW} > -0.5 V or V _{SW} < V _{CC} + 0.5 V; pulsed at 1 ms duration, < 10 % duty cycle; peak current | - | ±500 | mA |
| T _{stg} | storage temperature | | -65 | +150 | °C |
| P _{tot} | total power dissipation | T _{amb} = -40 °C to +125 °C | | | |
| | | HXQFN16 | ^[3] - | 250 | mW |

Table 5. Limiting values...continued

In accordance with the Absolute Maximum Rating System (IEC 60134). Voltages are referenced to GND (ground = 0 V).

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|--------|-----------|------------|-----|-----|-----|------|
| | | TSSOP16 | [4] | - | 500 | mW |

- [1] The minimum input voltage rating may be exceeded if the input current rating is observed.
- [2] The minimum and maximum switch voltage ratings may be exceeded if the switch clamping current rating is observed but may not exceed 4.6 V.
- [3] For HXQFN16 package: above 135 °C the value of P_{tot} derates linearly with 16.9 mW/K.
- [4] For TSSOP16 package: above 60 °C the value of P_{tot} derates linearly with 5.5 mW/K.

9 Recommended operating conditions

Table 6. Recommended operating conditions

| Symbol | Parameter | Conditions | | Min | Max | Unit |
|------------------|-------------------------------------|---|-----|-----|-----------------|------|
| V _{CC} | supply voltage | | | 1.4 | 4.3 | V |
| V _I | input voltage | nS and \bar{E} | | 0 | 4.3 | V |
| V _{SW} | switch voltage | | [1] | 0 | V _{CC} | V |
| T _{amb} | ambient temperature | | | -40 | +125 | °C |
| Δt/ΔV | input transition rise and fall rate | nS and \bar{E} ; V _{CC} = 1.4 V to 4.3 V | | - | 200 | ns/V |

- [1] To avoid sinking GND current from terminal nZ when switch current flows in terminal nYn, the voltage drop across the bidirectional switch must not exceed 0.4 V. If the switch current flows into terminal nZ, no GND current will flow from terminal nYn. In this case, there is no limit for the voltage drop across the switch.

10 Static characteristics

Table 7. Static characteristics

At recommended operating conditions; voltages are referenced to GND (ground 0 V).

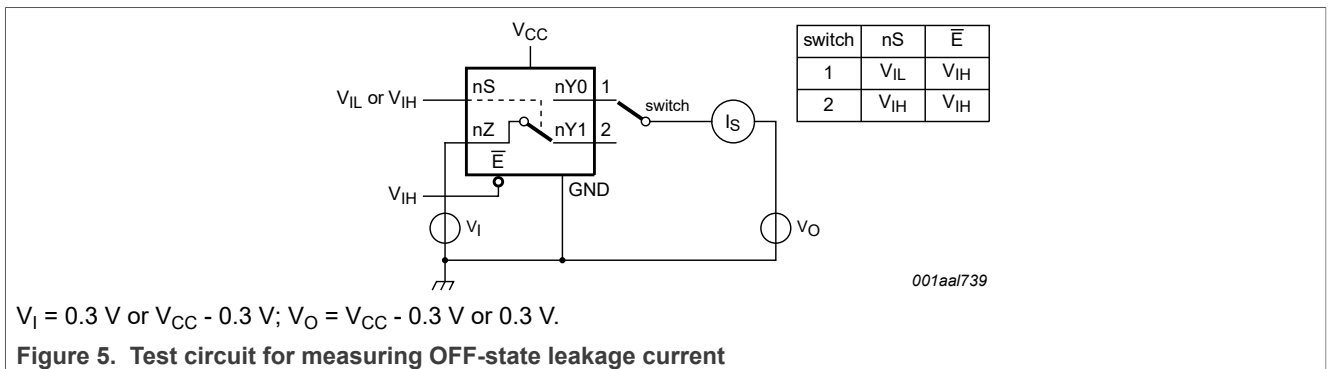
| Symbol | Parameter | Conditions | T _{amb} = 25 °C | | | T _{amb} = -40 °C to +125 °C | | | Unit |
|-----------------|--------------------------|--|--------------------------|-----|-----|--------------------------------------|-------------|--------------|------|
| | | | Min | Typ | Max | Min | Max (85 °C) | Max (125 °C) | |
| V _{IH} | HIGH-level input voltage | V _{CC} = 1.4 V to 1.6 V | 0.9 | - | - | 0.9 | - | - | V |
| | | V _{CC} = 1.65 V to 1.95 V | 0.9 | - | - | 0.9 | - | - | V |
| | | V _{CC} = 2.3 V to 2.7 V | 1.1 | - | - | 1.1 | - | - | V |
| | | V _{CC} = 2.7 V to 3.6 V | 1.3 | - | - | 1.3 | - | - | V |
| | | V _{CC} = 3.6 V to 4.3 V | 1.4 | - | - | 1.4 | - | - | V |
| V _{IL} | LOW-level input voltage | V _{CC} = 1.4 V to 1.6 V | - | - | 0.3 | - | 0.3 | 0.3 | V |
| | | V _{CC} = 1.65 V to 1.95 V | - | - | 0.4 | - | 0.4 | 0.3 | V |
| | | V _{CC} = 2.3 V to 2.7 V | - | - | 0.4 | - | 0.4 | 0.4 | V |
| | | V _{CC} = 2.7 V to 3.6 V | - | - | 0.5 | - | 0.5 | 0.5 | V |
| | | V _{CC} = 3.6 V to 4.3 V | - | - | 0.6 | - | 0.6 | 0.6 | V |
| I _I | input leakage current | nS and \bar{E} ; V _I = GND to 4.3 V; V _{CC} = 1.4 V to 4.3 V | - | - | - | - | ±0.5 | ±1 | μA |

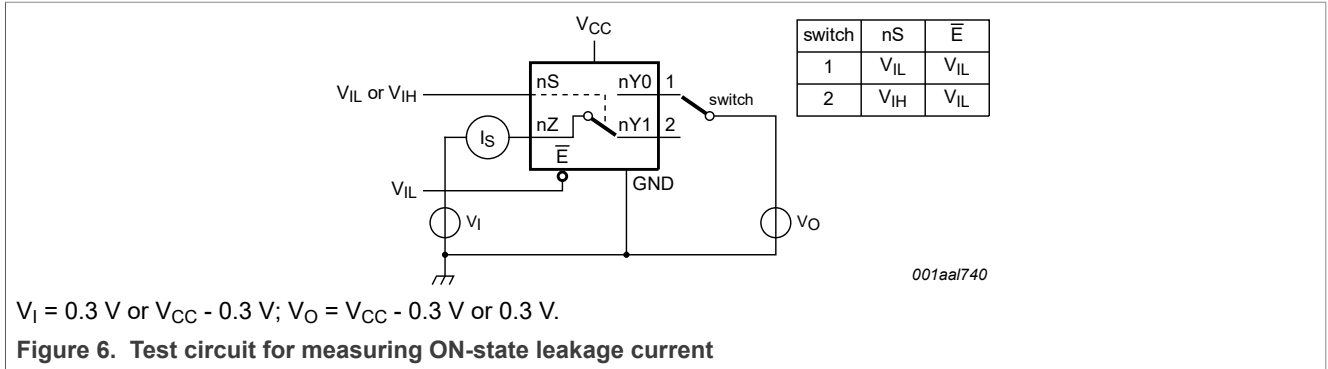
Table 7. Static characteristics...continued

At recommended operating conditions; voltages are referenced to GND (ground 0 V).

| Symbol | Parameter | Conditions | T _{amb} = 25 °C | | | T _{amb} = -40 °C to +125 °C | | | Unit |
|---------------------|---------------------------|---|--------------------------|------|------|--------------------------------------|-------------|--------------|------|
| | | | Min | Typ | Max | Min | Max (85 °C) | Max (125 °C) | |
| I _{S(OFF)} | OFF-state leakage current | nY0 and nY1 port; see Figure 5 | | | | | | | |
| | | V _{CC} = 1.4 V to 3.6 V | - | - | ±5 | - | ±50 | ±500 | nA |
| | | V _{CC} = 3.6 V to 4.3 V | - | - | ±10 | - | ±50 | ±500 | nA |
| I _{S(ON)} | ON-state leakage current | nZ port; V _{CC} = 1.4 V to 3.6 V; see Figure 6 | | | | | | | |
| | | V _{CC} = 1.4 V to 3.6 V | - | - | ±5 | - | ±50 | ±500 | nA |
| | | V _{CC} = 3.6 V to 4.3 V | - | - | ±10 | - | ±50 | ±500 | nA |
| I _{CC} | supply current | V _I = V _{CC} or GND; V _{SW} = GND or V _{CC} | | | | | | | |
| | | V _{CC} = 3.6 V | - | - | 100 | - | 500 | 5000 | nA |
| | | V _{CC} = 4.3 V | - | - | 150 | - | 800 | 6000 | nA |
| ΔI _{CC} | additional supply current | V _{SW} = GND or V _{CC} | | | | | | | |
| | | V _I = 2.6 V; V _{CC} = 4.3 V | - | 2.0 | 4.0 | - | 7 | 7 | μA |
| | | V _I = 2.6 V; V _{CC} = 3.6 V | - | 0.35 | 0.7 | - | 1 | 1 | μA |
| | | V _I = 1.8 V; V _{CC} = 4.3 V | - | 7.0 | 10.0 | - | 15 | 15 | μA |
| | | V _I = 1.8 V; V _{CC} = 3.6 V | - | 2.5 | 4.0 | - | 5 | 5 | μA |
| | | V _I = 1.8 V; V _{CC} = 2.5 V | - | 50 | 200 | - | 300 | 500 | nA |
| C _I | input capacitance | nS and \bar{E} | - | 1.0 | - | - | - | - | pF |
| C _{S(OFF)} | OFF-state capacitance | | - | 35 | - | - | - | - | pF |
| C _{S(ON)} | ON-state capacitance | | - | 130 | - | - | - | - | pF |

10.1 Test circuits





10.2 ON resistance

Table 8. ON resistance^[1]

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for graphs see [Figure 8](#) to [Figure 14](#).

| Symbol | Parameter | Conditions | $T_{amb} = -40\text{ °C}$ to $+85\text{ °C}$ | | | $T_{amb} = -40\text{ °C}$ to $+125\text{ °C}$ | | Unit |
|-----------------|---|--|--|--------------------|------|---|------|----------|
| | | | Min | Typ ^[2] | Max | Min | Max | |
| $R_{ON(peak)}$ | ON resistance (peak) | $V_I = \text{GND to } V_{CC}; I_{SW} = 100\text{ mA}$; see Figure 7 | | | | | | |
| | | $V_{CC} = 1.4\text{ V}$ | - | 1.8 | 3.8 | - | 4.2 | Ω |
| | | $V_{CC} = 1.65\text{ V}$ | - | 1.0 | 1.7 | - | 1.8 | Ω |
| | | $V_{CC} = 2.3\text{ V}$ | - | 0.6 | 0.9 | - | 1.0 | Ω |
| | | $V_{CC} = 2.7\text{ V}$ | - | 0.6 | 0.80 | - | 1.0 | Ω |
| | | $V_{CC} = 4.3\text{ V}$ | - | 0.5 | 0.80 | - | 1.0 | Ω |
| ΔR_{ON} | ON resistance mismatch between channels | $V_I = \text{GND to } V_{CC}; I_{SW} = 100\text{ mA}$ ^[3] | | | | | | |
| | | $V_{CC} = 1.4\text{ V}; V_{SW} = 0.4\text{ V}$ | - | 0.23 | 0.38 | - | 0.38 | Ω |
| | | $V_{CC} = 1.65\text{ V}; V_{SW} = 0.5\text{ V}$ | - | 0.23 | 0.28 | - | 0.38 | Ω |
| | | $V_{CC} = 2.3\text{ V}; V_{SW} = 0.7\text{ V}$ | - | 0.12 | 0.15 | - | 0.18 | Ω |
| | | $V_{CC} = 2.7\text{ V}; V_{SW} = 0.8\text{ V}$ | - | 0.12 | 0.15 | - | 0.18 | Ω |
| | | $V_{CC} = 4.3\text{ V}; V_{SW} = 0.8\text{ V}$ | - | 0.12 | 0.15 | - | 0.18 | Ω |
| $R_{ON(flat)}$ | ON resistance (flatness) | $V_I = \text{GND to } V_{CC}; I_{SW} = 100\text{ mA}$ ^[4] | | | | | | |
| | | $V_{CC} = 1.4\text{ V}$ | - | 1.0 | 3.3 | - | 3.6 | Ω |
| | | $V_{CC} = 1.65\text{ V}$ | - | 0.5 | 1.2 | - | 1.3 | Ω |
| | | $V_{CC} = 2.3\text{ V}$ | - | 0.15 | 0.3 | - | 0.35 | Ω |
| | | $V_{CC} = 2.7\text{ V}$ | - | 0.13 | 0.3 | - | 0.35 | Ω |
| | | $V_{CC} = 4.3\text{ V}$ | - | 0.2 | 0.4 | - | 0.45 | Ω |

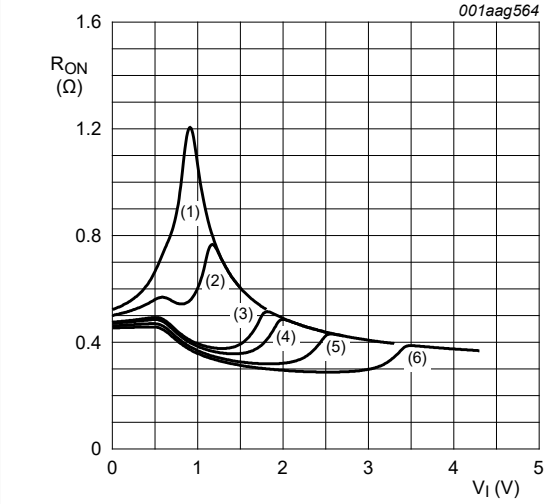
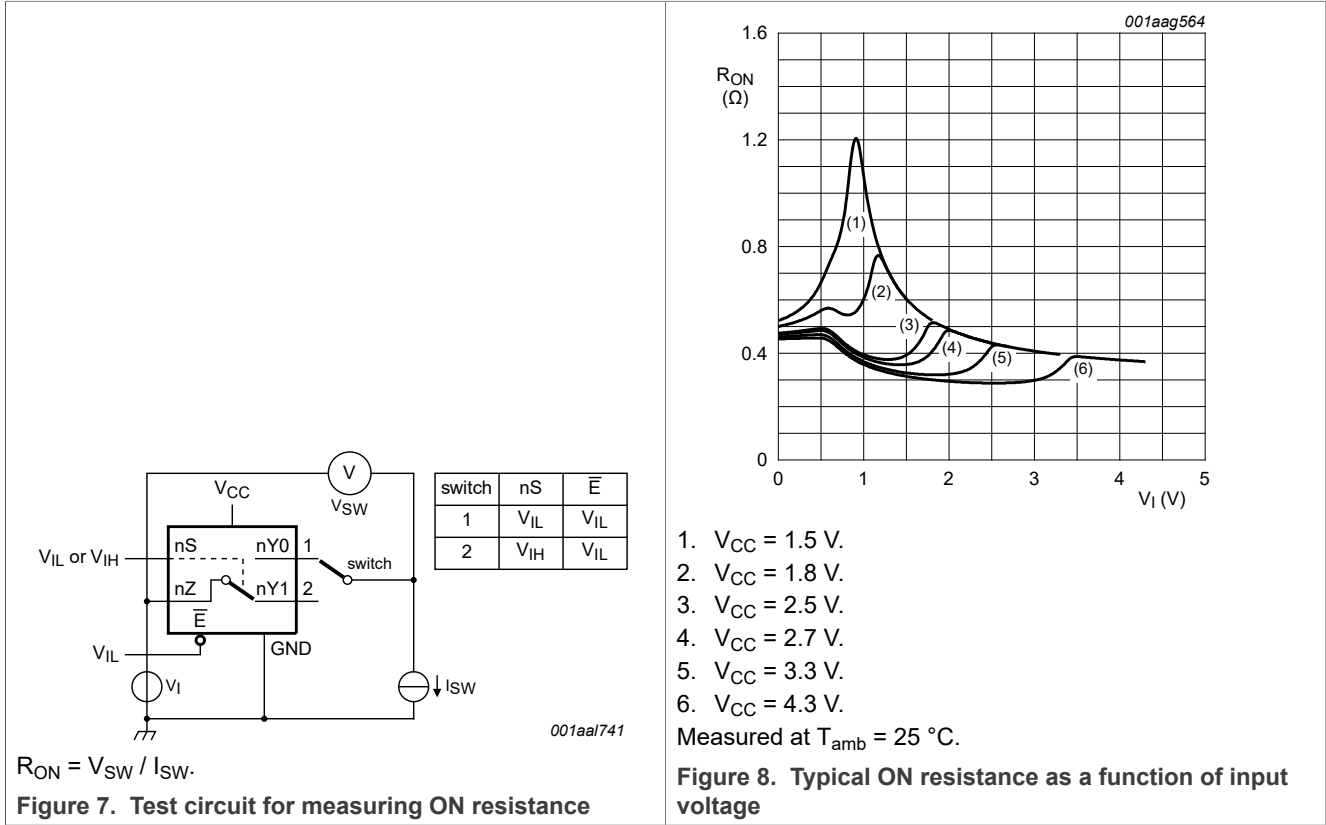
[1] For NX3L4053PW (TSSOP16 package), all ON resistance values are up to 0.05 Ω higher.

[2] Typical values are measured at $T_{amb} = 25\text{ °C}$.

[3] Measured at identical V_{CC} , temperature and input voltage.

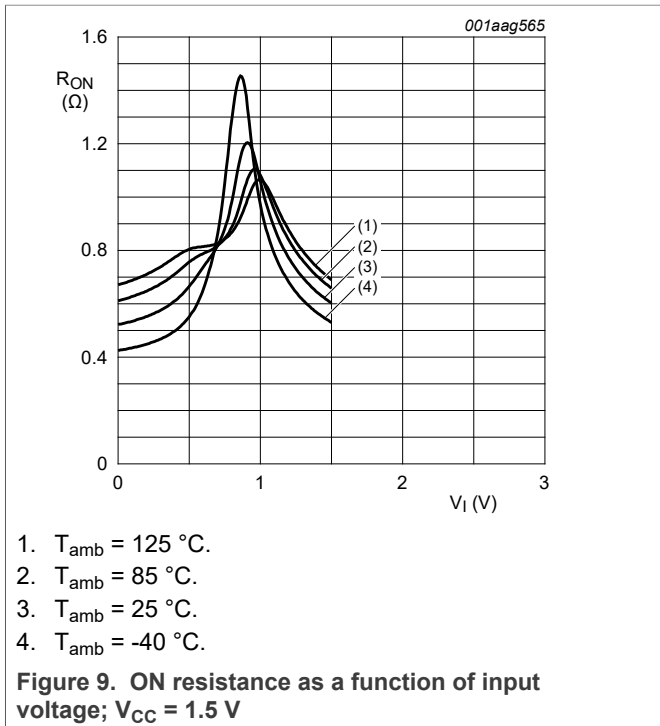
[4] Flatness is defined as the difference between the maximum and minimum value of ON resistance measured at identical V_{CC} and temperature.

10.3 ON resistance test circuit and graphs



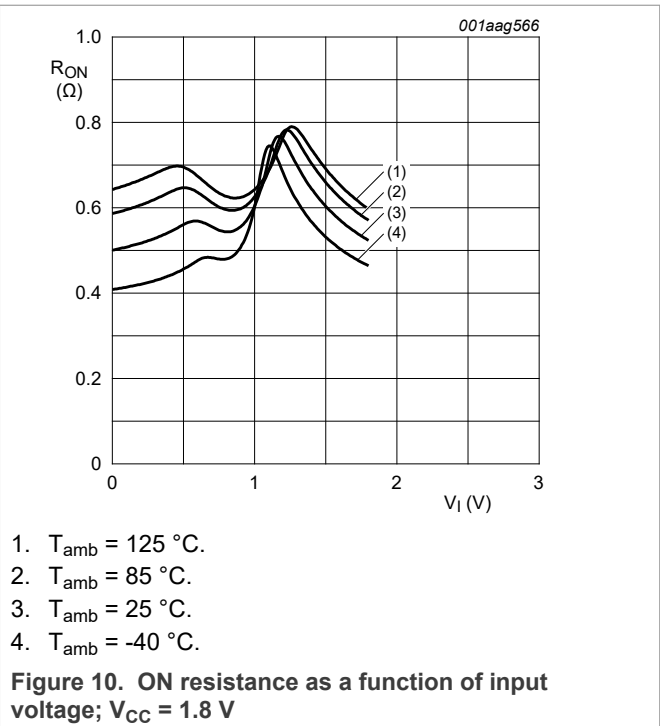
1. V_{CC} = 1.5 V.
 2. V_{CC} = 1.8 V.
 3. V_{CC} = 2.5 V.
 4. V_{CC} = 2.7 V.
 5. V_{CC} = 3.3 V.
 6. V_{CC} = 4.3 V.
- Measured at T_{amb} = 25 °C.

Figure 8. Typical ON resistance as a function of input voltage



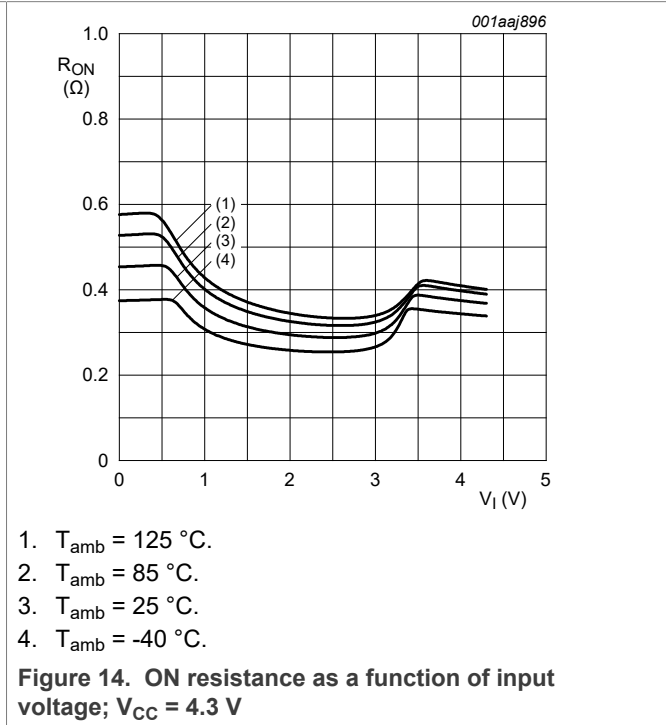
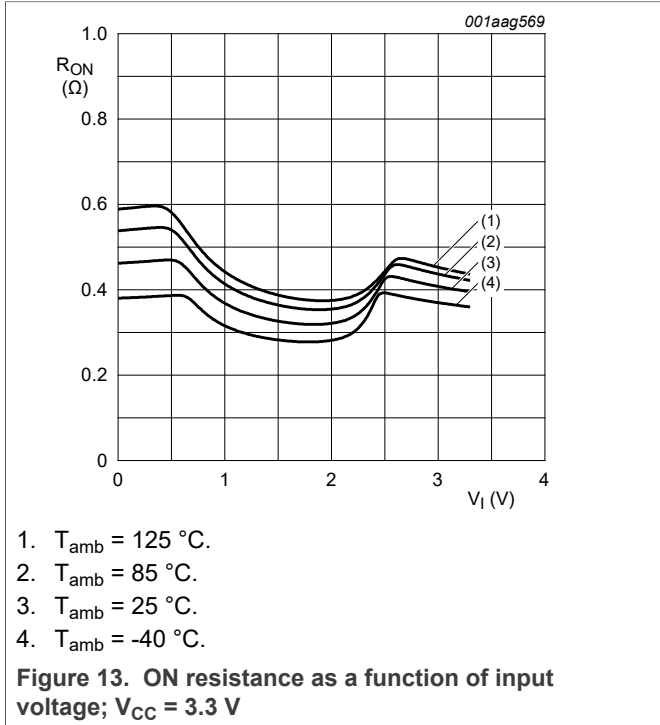
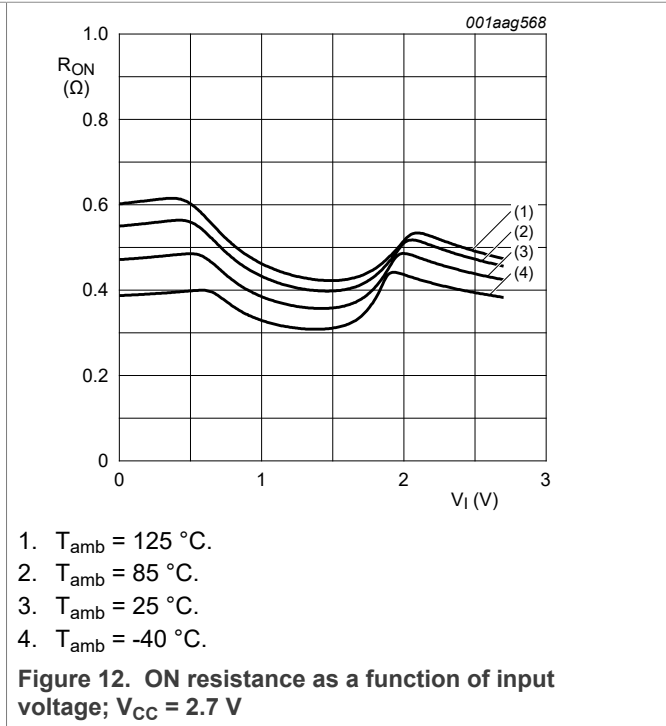
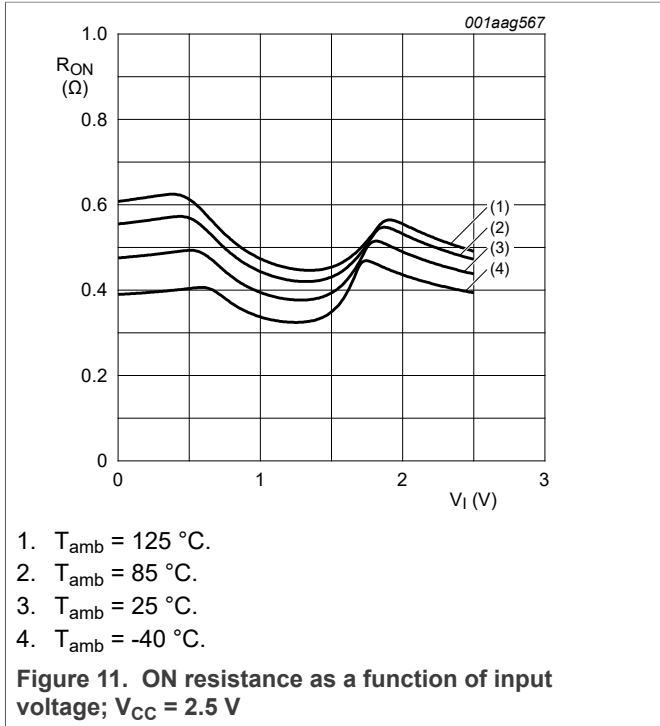
1. T_{amb} = 125 °C.
2. T_{amb} = 85 °C.
3. T_{amb} = 25 °C.
4. T_{amb} = -40 °C.

Figure 9. ON resistance as a function of input voltage; V_{CC} = 1.5 V



1. T_{amb} = 125 °C.
2. T_{amb} = 85 °C.
3. T_{amb} = 25 °C.
4. T_{amb} = -40 °C.

Figure 10. ON resistance as a function of input voltage; V_{CC} = 1.8 V



11 Dynamic characteristics

Table 9. Dynamic characteristics

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); for load circuit see Figure 17.

| Symbol | Parameter | Conditions | T _{amb} = 25 °C | | | T _{amb} = -40 °C to +125 °C | | | Unit |
|------------------|------------------------|------------------------------------|--------------------------|--------------------|-----|--------------------------------------|-------------|--------------|------|
| | | | Min | Typ ^[1] | Max | Min | Max (85 °C) | Max (125 °C) | |
| t _{en} | enable time | E, nS to nZ or nYn; see Figure 15 | | | | | | | |
| | | V _{CC} = 1.4 V to 1.6 V | - | 49 | 90 | - | 120 | 120 | ns |
| | | V _{CC} = 1.65 V to 1.95 V | - | 35 | 70 | - | 80 | 90 | ns |
| | | V _{CC} = 2.3 V to 2.7 V | - | 23 | 45 | - | 50 | 55 | ns |
| | | V _{CC} = 2.7 V to 3.6 V | - | 21 | 40 | - | 45 | 50 | ns |
| | | V _{CC} = 3.6 V to 4.3 V | - | 21 | 40 | - | 45 | 50 | ns |
| t _{dis} | disable time | Ē, nS to nZ or nYn; see Figure 15 | | | | | | | |
| | | V _{CC} = 1.4 V to 1.6 V | - | 32 | 70 | - | 80 | 90 | ns |
| | | V _{CC} = 1.65 V to 1.95 V | - | 17 | 55 | - | 60 | 65 | ns |
| | | V _{CC} = 2.3 V to 2.7 V | - | 11 | 25 | - | 30 | 35 | ns |
| | | V _{CC} = 2.7 V to 3.6 V | - | 8 | 20 | - | 25 | 30 | ns |
| | | V _{CC} = 3.6 V to 4.3 V | - | 8 | 20 | - | 25 | 30 | ns |
| t _{b-m} | break-before-make time | see Figure 16 | [2] | | | | | | |
| | | V _{CC} = 1.4 V to 1.6 V | - | 19 | - | 9 | - | - | ns |
| | | V _{CC} = 1.65 V to 1.95 V | - | 17 | - | 7 | - | - | ns |
| | | V _{CC} = 2.3 V to 2.7 V | - | 13 | - | 4 | - | - | ns |
| | | V _{CC} = 2.7 V to 3.6 V | - | 10 | - | 3 | - | - | ns |
| | | V _{CC} = 3.6 V to 4.3 V | - | 9 | - | 2 | - | - | ns |

[1] Typical values are measured at T_{amb} = 25 °C and V_{CC} = 1.5 V, 1.8 V, 2.5 V, 3.3 V and 4.3 V respectively.

[2] Break-before-make guaranteed by design.

11.1 Waveform and test circuits

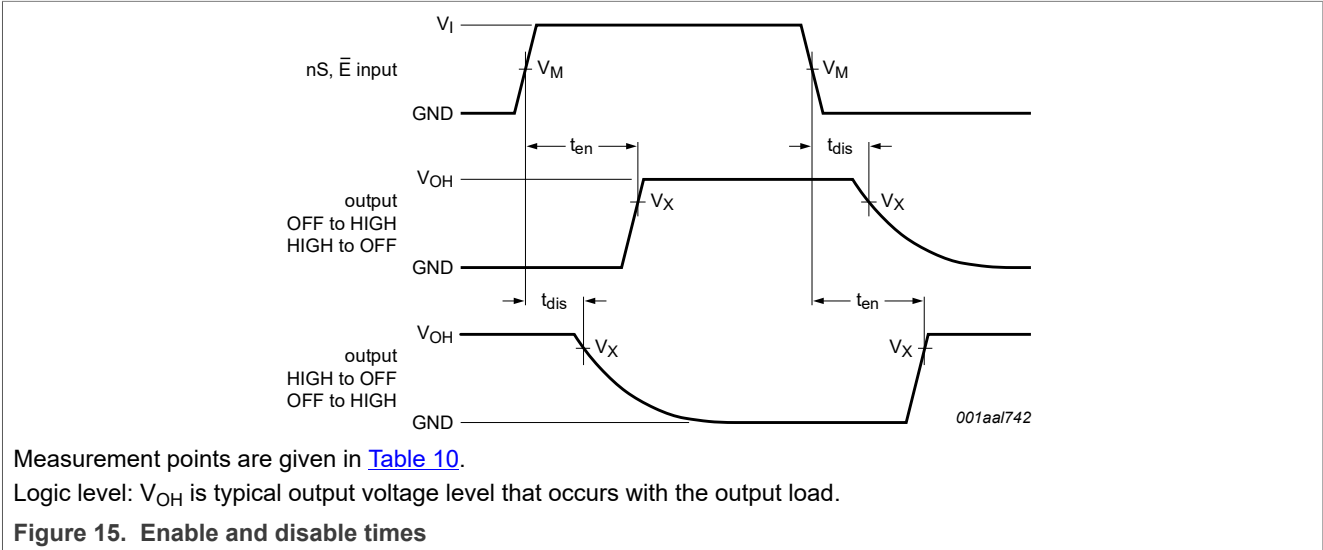


Table 10. Measurement points

| Supply voltage | Input | Output |
|----------------|-------------|-------------|
| V_{CC} | V_M | V_X |
| 1.4 V to 4.3 V | $0.5V_{CC}$ | $0.9V_{OH}$ |

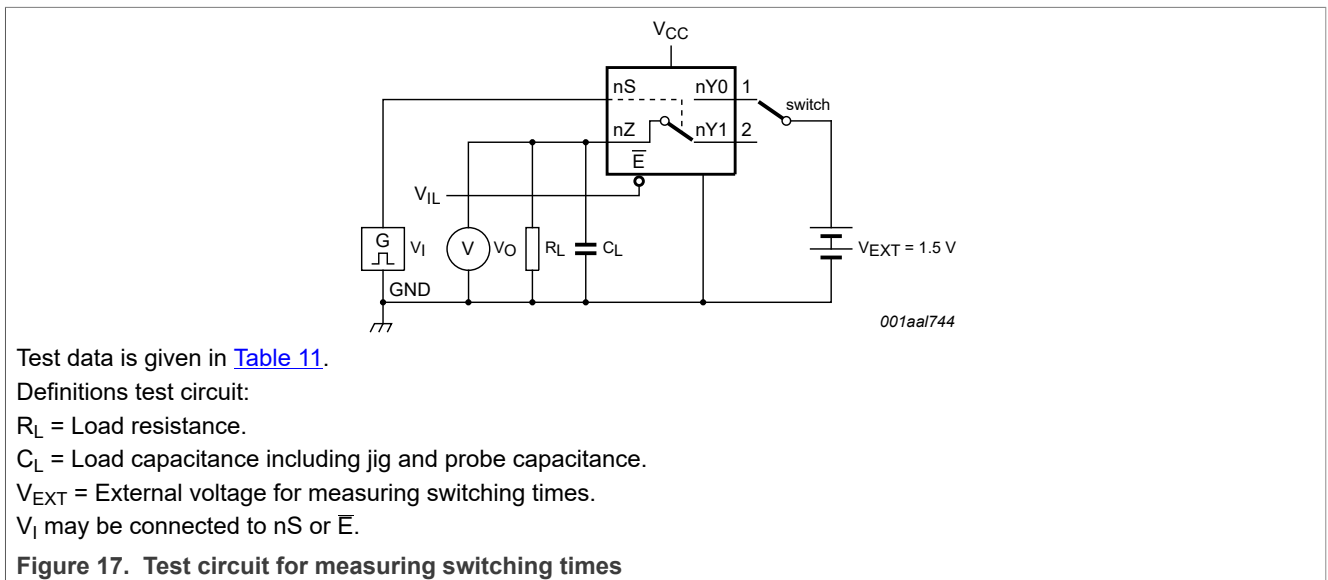
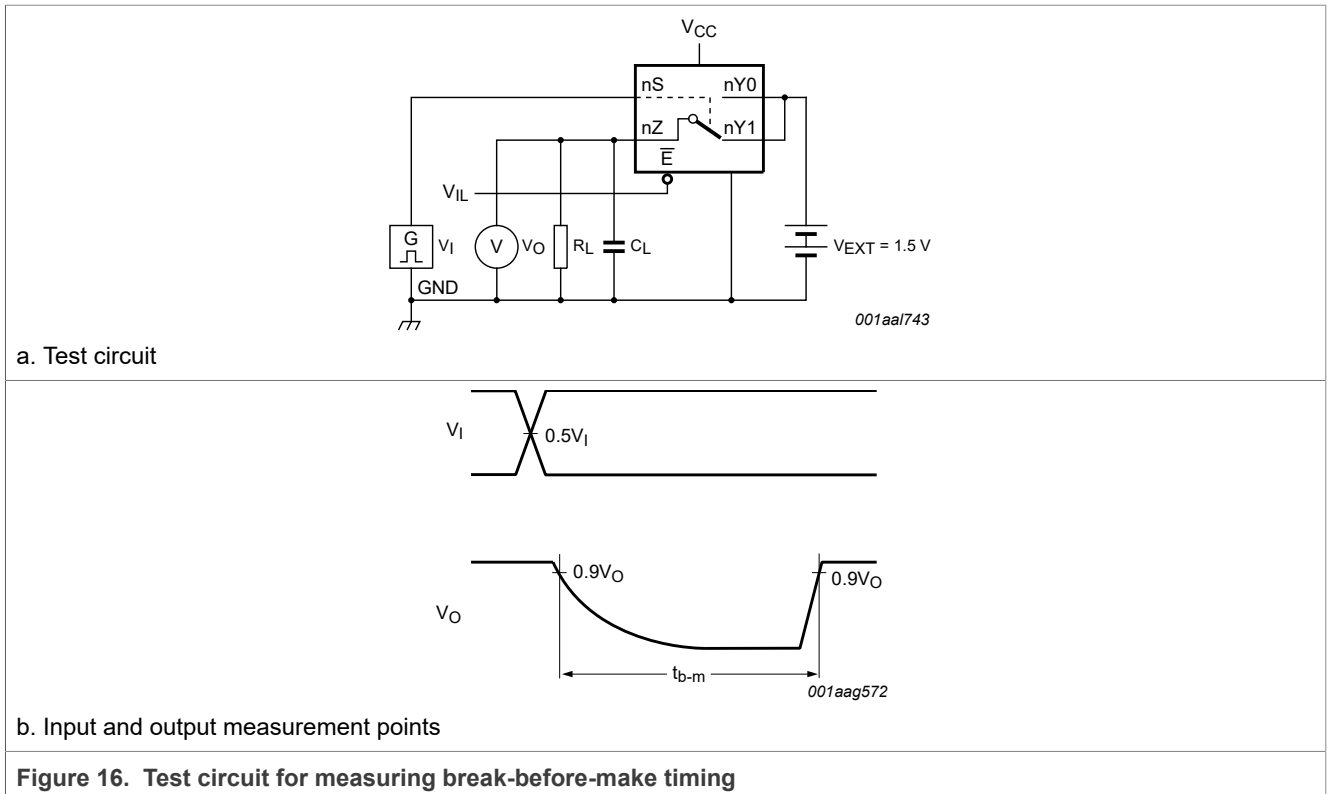


Table 11. Test data

| Supply voltage | Input | | Load | |
|----------------|----------|---------------|-------|-------------|
| V_{CC} | V_I | t_r, t_f | C_L | R_L |
| 1.4 V to 4.3 V | V_{CC} | ≤ 2.5 ns | 35 pF | 50 Ω |

11.2 Additional dynamic characteristics

Table 12. Additional dynamic characteristics

At recommended operating conditions; voltages are referenced to GND (ground = 0 V); $V_I = \text{GND}$ or V_{CC} (unless otherwise specified); $t_r = t_f \leq 2.5 \text{ ns}$; $T_{amb} = 25 \text{ }^\circ\text{C}$.

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|-----------------------|---------------------------|--|-----|-----|------|------|-----|
| THD | total harmonic distortion | $f_i = 20 \text{ Hz to } 20 \text{ kHz}$; $R_L = 32 \text{ } \Omega$; see Figure 18 | [1] | | | | |
| | | $V_{CC} = 1.4 \text{ V}$; $V_I = 1 \text{ V (p-p)}$ | | - | 0.15 | - | % |
| | | $V_{CC} = 1.65 \text{ V}$; $V_I = 1.2 \text{ V (p-p)}$ | | - | 0.10 | - | % |
| | | $V_{CC} = 2.3 \text{ V}$; $V_I = 1.5 \text{ V (p-p)}$ | | - | 0.02 | - | % |
| | | $V_{CC} = 2.7 \text{ V}$; $V_I = 2 \text{ V (p-p)}$ | | - | 0.02 | - | % |
| | | $V_{CC} = 4.3 \text{ V}$; $V_I = 2 \text{ V (p-p)}$ | | - | 0.02 | - | % |
| $f_{(-3\text{dB})}$ | -3 dB frequency response | $R_L = 50 \text{ } \Omega$; see Figure 19 | [1] | | | | |
| | | $V_{CC} = 1.4 \text{ V to } 4.3 \text{ V}$ | | - | 60 | - | MHz |
| α_{iso} | isolation (OFF-state) | $f_i = 100 \text{ kHz}$; $R_L = 50 \text{ } \Omega$; see Figure 20 | [1] | | | | |
| | | $V_{CC} = 1.4 \text{ V to } 4.3 \text{ V}$ | | - | -90 | - | dB |
| V_{ct} | crosstalk voltage | between digital inputs and switch; $f_i = 1 \text{ MHz}$; $C_L = 50 \text{ pF}$; $R_L = 50 \text{ } \Omega$; see Figure 21 | | | | | |
| | | $V_{CC} = 1.4 \text{ V to } 3.6 \text{ V}$ | | - | 0.2 | - | V |
| | | $V_{CC} = 3.6 \text{ V to } 4.3 \text{ V}$ | | - | 0.3 | - | V |
| Xtalk | crosstalk | between switches; $f_i = 100 \text{ kHz}$; $R_L = 50 \text{ } \Omega$; see Figure 22 | [1] | | | | |
| | | $V_{CC} = 1.4 \text{ V to } 4.3 \text{ V}$ | | - | -90 | - | dB |
| Q_{inj} | charge injection | $f_i = 1 \text{ MHz}$; $C_L = 0.1 \text{ nF}$; $R_L = 1 \text{ M}\Omega$; $V_{\text{gen}} = 0 \text{ V}$; $R_{\text{gen}} = 0 \text{ } \Omega$; see Figure 23 | | | | | |
| | | $V_{CC} = 1.5 \text{ V}$ | | - | 3 | - | pC |
| | | $V_{CC} = 1.8 \text{ V}$ | | - | 4 | - | pC |
| | | $V_{CC} = 2.5 \text{ V}$ | | - | 6 | - | pC |
| | | $V_{CC} = 3.3 \text{ V}$ | | - | 9 | - | pC |
| | | $V_{CC} = 4.3 \text{ V}$ | | - | 15 | - | pC |

[1] f_i is biased at $0.5V_{CC}$.

11.3 Test circuits

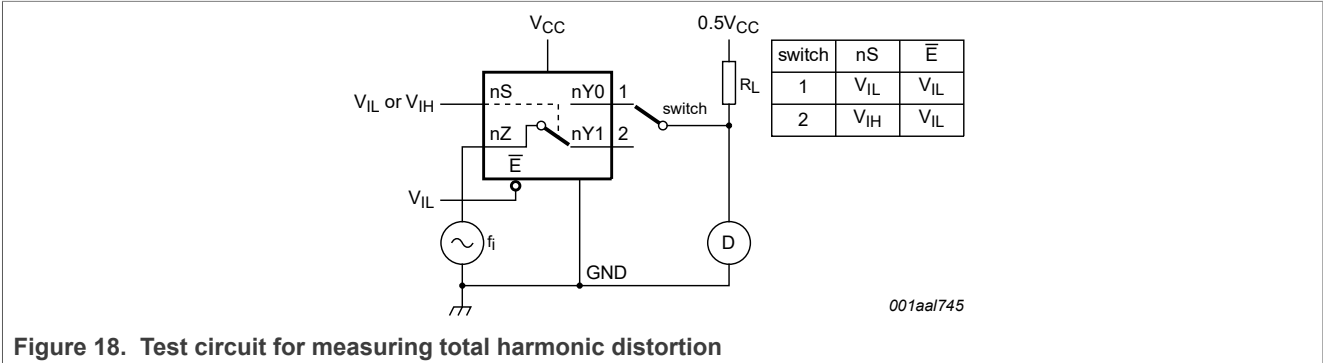


Figure 18. Test circuit for measuring total harmonic distortion

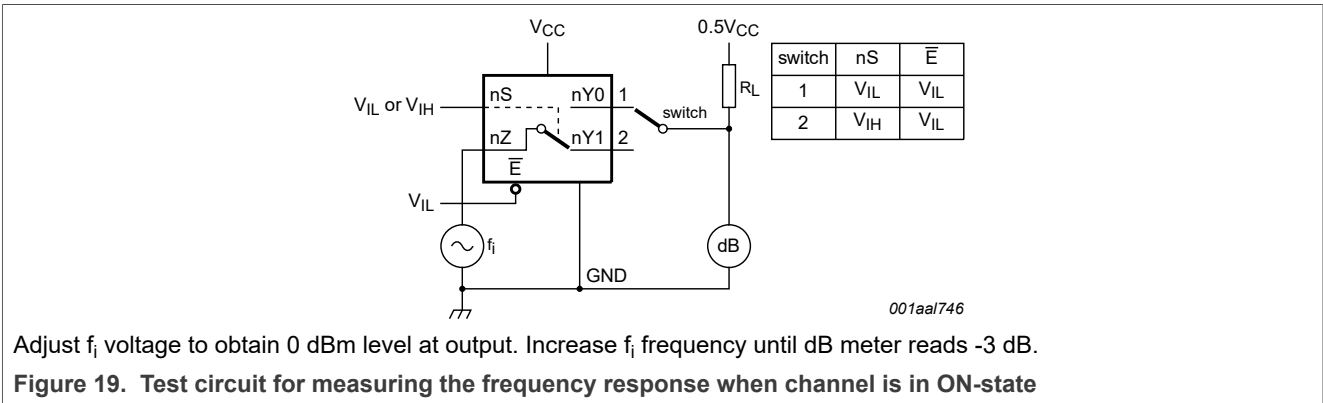


Figure 19. Test circuit for measuring the frequency response when channel is in ON-state

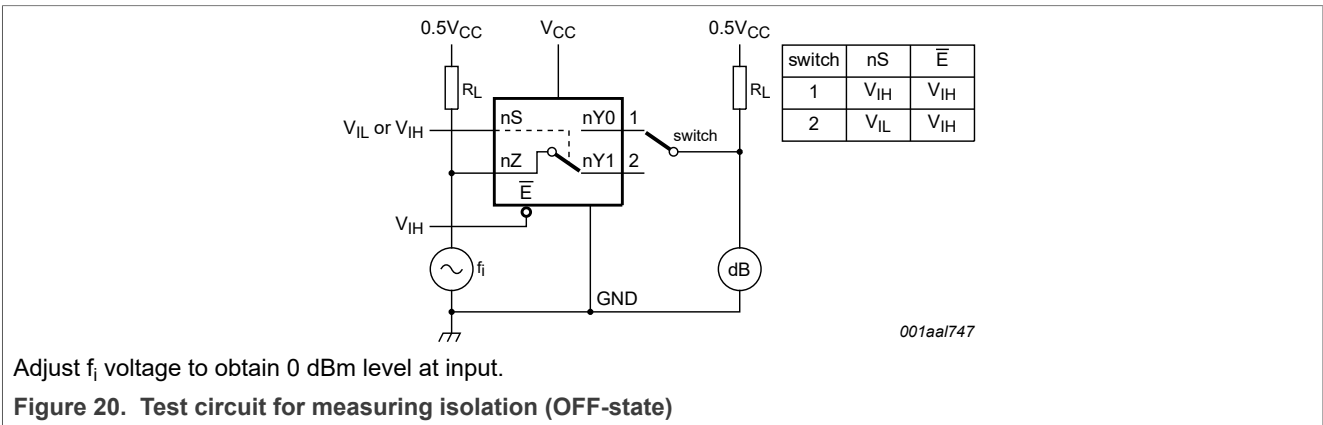
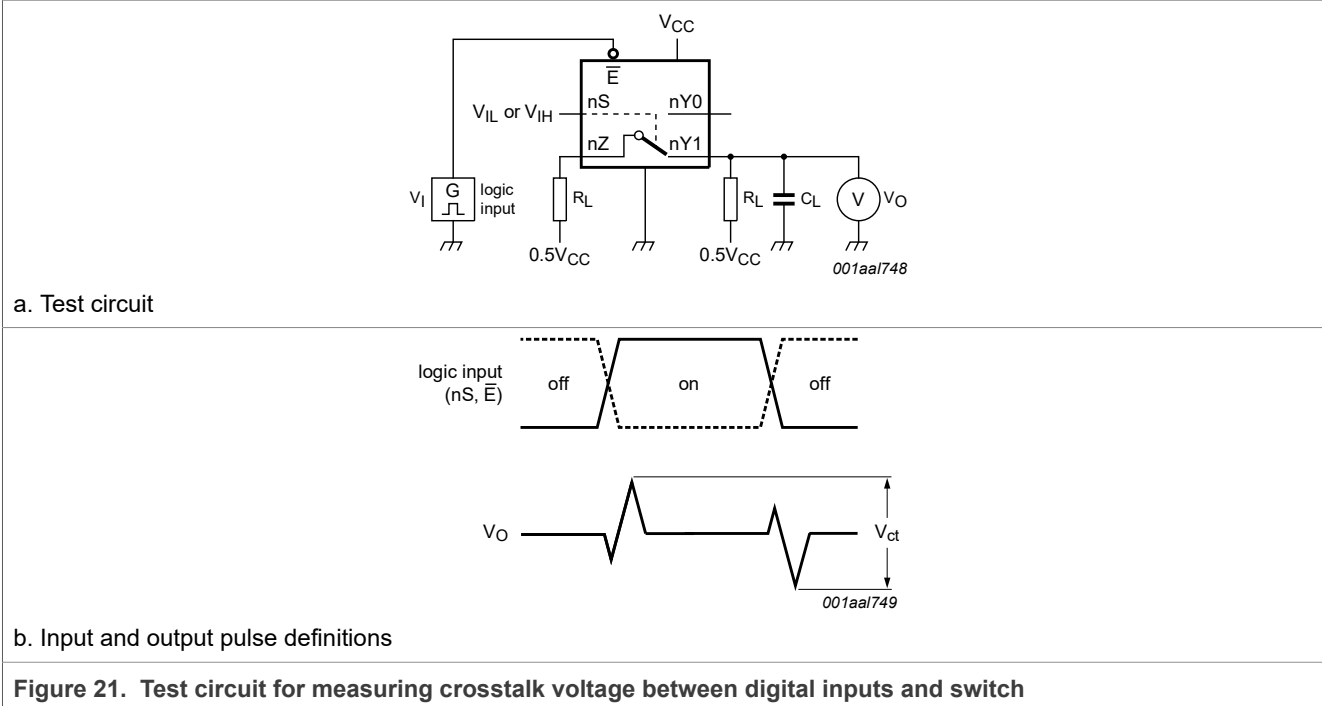


Figure 20. Test circuit for measuring isolation (OFF-state)



a. Test circuit

b. Input and output pulse definitions

Figure 21. Test circuit for measuring crosstalk voltage between digital inputs and switch

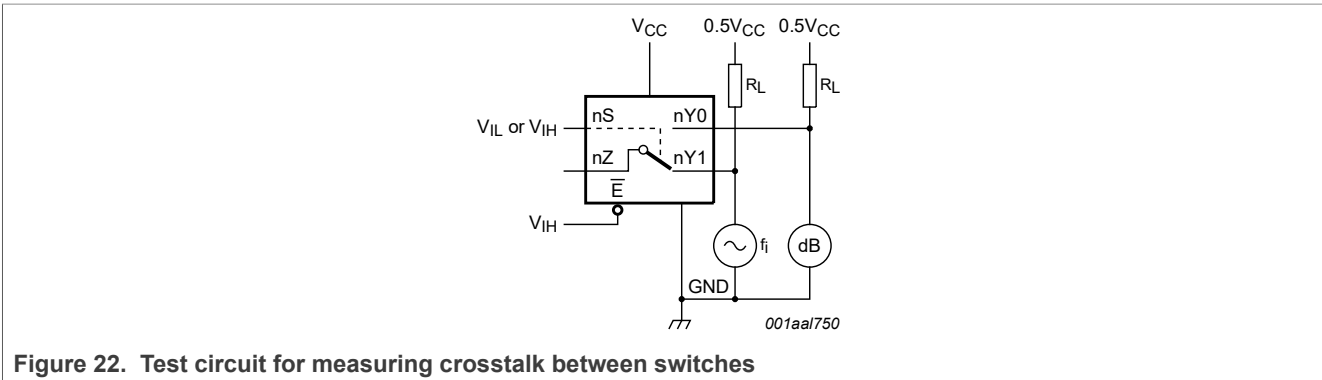
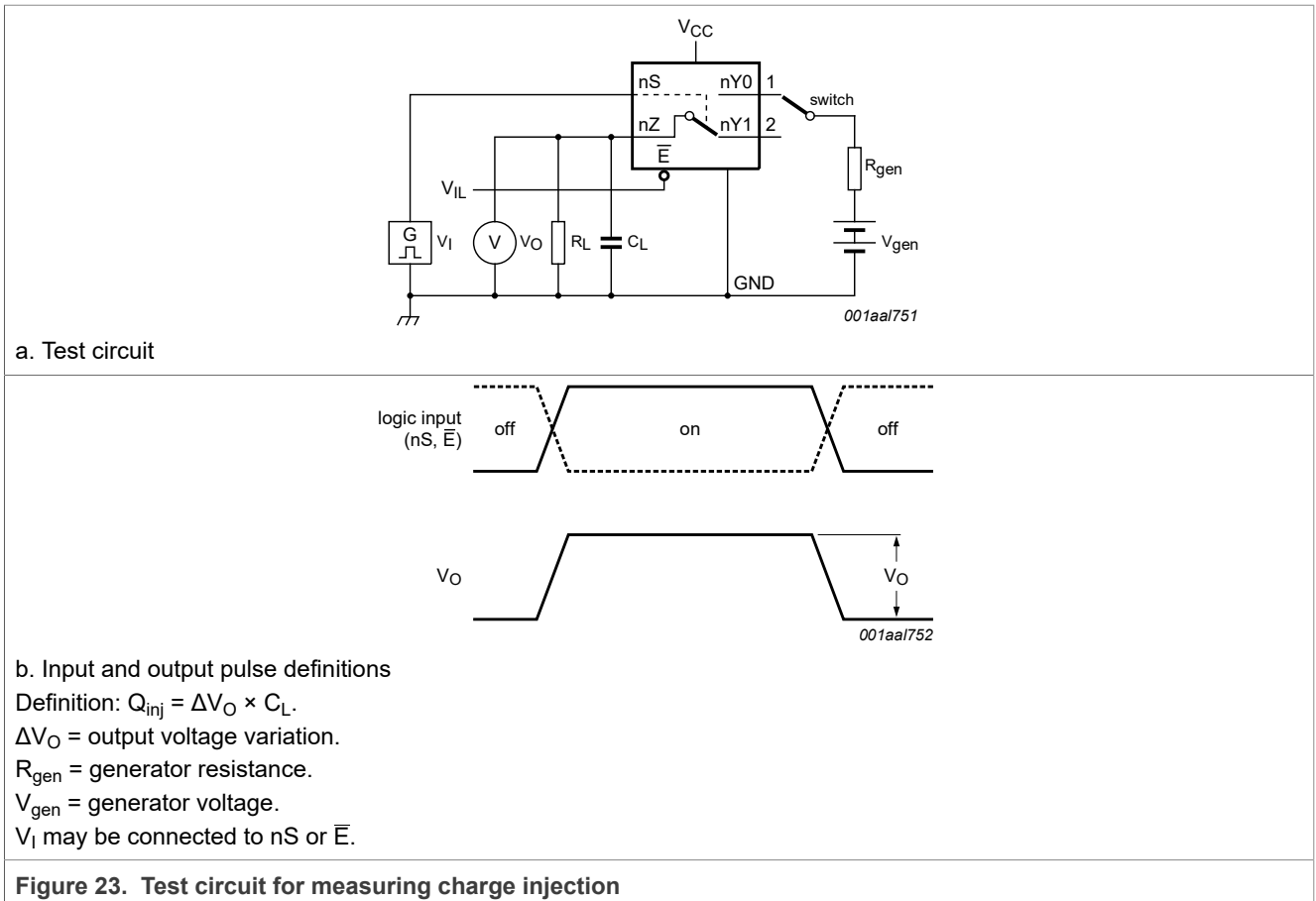


Figure 22. Test circuit for measuring crosstalk between switches



12 Package outline

HXQFN16 (U): plastic thermal enhanced extremely thin quad flat package; no leads; 16 terminals; body 3 x 3 x 0.5 mm

SOT1039-2

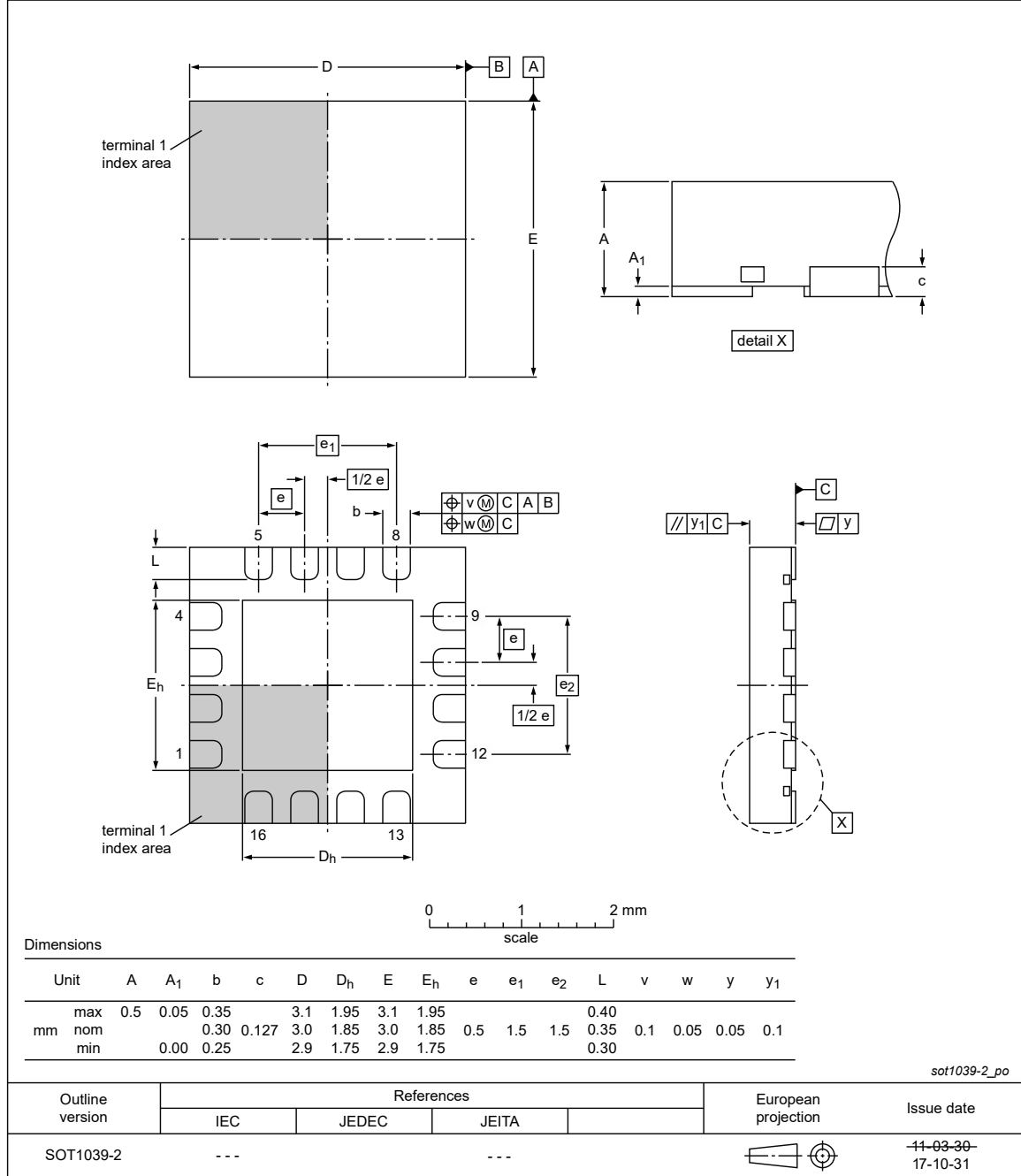
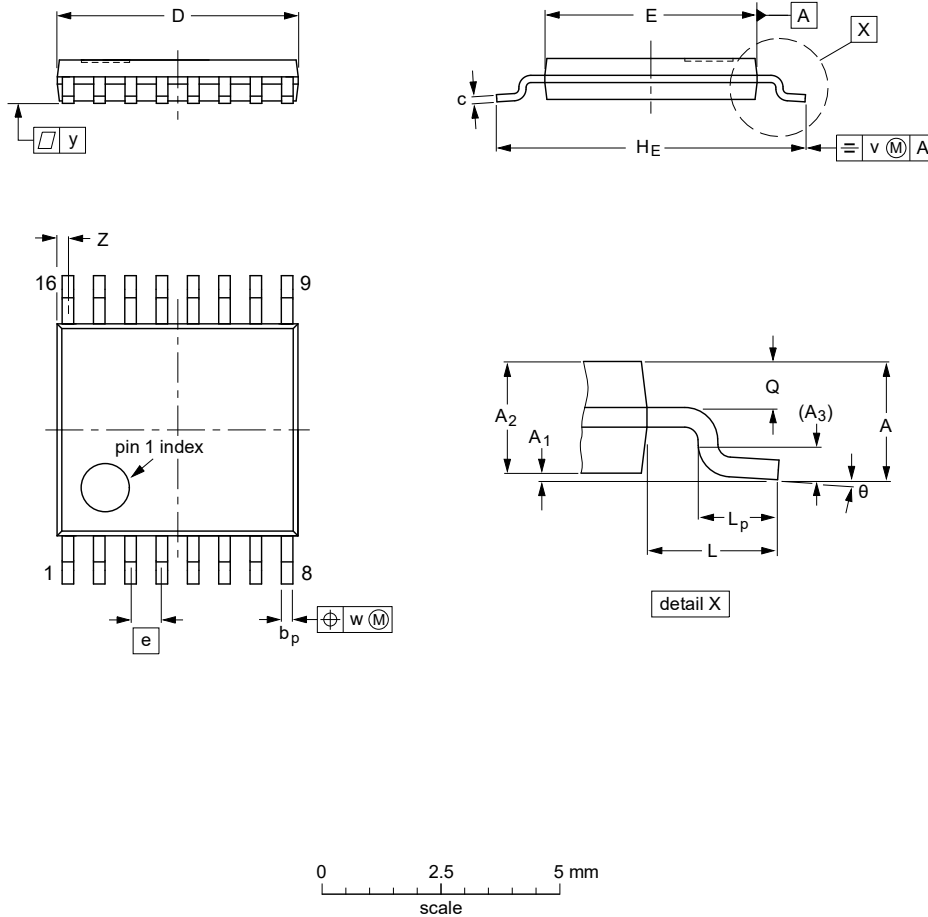


Figure 24. Package outline SOT1039-2 (HXQFN16)

TSSOP16: plastic thin shrink small outline package; 16 leads; body width 4.4 mm

SOT403-1



DIMENSIONS (mm are the original dimensions)

| UNIT | A max. | A ₁ | A ₂ | A ₃ | b _p | c | D ⁽¹⁾ | E ⁽²⁾ | e | H _E | L | L _p | Q | v | w | y | Z ⁽¹⁾ | θ |
|------|--------|----------------|----------------|----------------|----------------|------------|------------------|------------------|------|----------------|---|----------------|------------|-----|------|-----|------------------|----------|
| mm | 1.1 | 0.15 0.05 | 0.95 0.80 | 0.25 | 0.30 0.19 | 0.2 0.1 | 5.1 4.9 | 4.5 4.3 | 0.65 | 6.6 6.2 | 1 | 0.75 0.50 | 0.4 0.3 | 0.2 | 0.13 | 0.1 | 0.40 0.06 | 8° 0° |

Notes

1. Plastic or metal protrusions of 0.15 mm maximum per side are not included.
2. Plastic interlead protrusions of 0.25 mm maximum per side are not included.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|--------|-------|--|---------------------|----------------------|
| | IEC | JEDEC | JEITA | | | |
| SOT403-1 | | MO-153 | | | | 99-12-27 03-02-18 |

Figure 25. Package outline SOT403-1 (TSSOP16)

13 Abbreviations

Table 13. Abbreviations

| Acronym | Description |
|---------|---|
| CDM | Charged Device Model |
| CMOS | Complementary Metal-Oxide Semiconductor |
| ESD | ElectroStatic Discharge |
| HBM | Human Body Model |
| MM | Machine Model |
| PDA | Personal Digital Assistant |

14 Revision history

Table 14. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|---|--------------------|---------------|--------------|
| NX3L4053 v.5.1 | 20210330 | Product data sheet | - | NX3L4053 v.5 |
| Modifications: | <ul style="list-style-type: none"> Updated Section 4 "Ordering information". | | | |
| NX3L4053 v.5 | 20120625 | Product data sheet | - | NX3L4053 v.4 |
| NX3L4053 v.4 | 20111107 | Product data sheet | - | NX3L4053 v.3 |
| Modifications: | <ul style="list-style-type: none"> Legal pages updated. | | | |
| NX3L4053 v.3 | 20101223 | Product data sheet | - | NX3L4053 v.2 |
| NX3L4053 v.2 | 20100811 | Product data sheet | - | NX3L4053 v.1 |
| NX3L4053 v.1 | 20100416 | Product data sheet | - | - |

15 Legal information

15.1 Data sheet status

| Document status ^{[1][2]} | Product status ^[3] | Definition |
|-----------------------------------|-------------------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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Triple low-ohmic single-pole double-throw analog switch

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